ABSTRACT

The Universal Mobile Telecommunications System (UMTS) is one of the third generation (3G) mobile phone technologies. It uses WCDMA as the underlying standard. WCDMA was selected as the air interface for UMTS, the 3G successor to GSM.

UMTS network architecture comprises three main domains: User Equipment (UE), UMTS Terrestrial Radio Access Network (UTRAN), and Core Network (CN). The UE or ME contains the mobile phone and the SIM (Subscriber Identity Module) card called USIM (Universal SIM). UTRAN consists of Radio Network Subsystems (RANs) and RNS consists of Radio Network Controllers (RNCs). The function of RNC is to handle some Nodes B and connections to UE. Core Network consists of two main domains: Circuit Switched (CS) domain and Packet Switched domain.

In this final project, a core network will be planned for forecasted subscribers up to 2012 year. It will use the data from a previous final project which studied about radio access network planning. So, this final project is its continuation which titled "Perencanaan Radio Link UMTS-WCDMA Radio Link Planning and Business Aspect Modeling in Bandung (Debi, Armi (2001))". The network architecture that will be planned is 3G UMTS Release 4.

From the planning results, it will need MSS, MGW, and HLR one for each in CS Domain side. It will need SGSN, GGSN, Firewall, Border Gateway, Charging Gateway, and DNS one for each in PS Domain side.

Keywords: 3G UMTS-WCDMA, *Core Network, CS Domain,* **and** *PS Domain*